

THE NESTING HABITS OF HETERANTHIDIUM LARREAE
(CKLL.)

(Hymenoptera, Megachilidae)

BY J. W. MACSWAIN

University of California, Berkeley

The nesting habits of representatives of only five of the seven genera of non-parasitic Anthidiine bees occurring in North America have been recorded. Those of *Anthidium*, *Dianthidium*, *Calanthidium* and *Trachusa* are now well known through the publications of Hicks, Michener and others, while the nests of *Anthidiellum* have been briefly described by Schwarz (1928). It is hoped that the following note on a species of the genus *Heteranthidium* will add to the considerable information already available on this interesting tribe of bees.

Along the Pecos River near Loving, New Mexico, on May 11, 1945, a number of female *Heteranthidium larreae* (Ckll.)¹ were observed gathering pollen from creosote bush, *Larrea divaricata* Cav. In this area several dozen nests were found in a bare mound of hard-packed reddish-brown silt.

The individual burrows had been excavated by the females and consisted of circular holes, 6 mm. in diameter, which slanted into the ground 10 to 16 cm. and then went vertically for from 2½ to 4 cm. to terminate in an enlarged cavity 19 mm. in depth and 13 mm. at its greatest diameter. The vasiform cells, which were 16 mm. long, 6 mm. in the upper third and 7½ mm. at the greatest width, radiated out from the main cavity as numerous fingers. The cell walls were made from the surrounding soil and although slightly less than ½ mm. in thickness, they were cemented together by a resinous material in such a way that it was difficult to open them. Sufficient plant resin was impregnated into the cell walls to support combustion for several seconds. A semi-liquid pungent mass of pollen, with an unpleasant odor similar to iodine, filled the lower half of the provisioned cells. A single egg was deposited in each cell and then the cells were closed with a cap of the same materials used in the formation of the cell walls. The eggs were elongate, narrow and slightly curved, 4 mm. long by 1 mm. at the greatest diameter, with the

¹Identification by P. H. Timberlake, Riverside, California.

ends inserted into the food mass. The larvae upon hatching fed on the surface, and continued feeding with the head down in later instars. Upon completion of feeding the larvae spun tough brown mammilate cocoons with the nipples ends facing the opening and with larval feces between the cocoons and the cell opening. The larvae overwintered and transformed to adults the following spring.

Michener (1944) has assigned the genus *Heteranthidium* a position between *Trachusa* and *Dianthidium* and his phylogenetic interpretation is borne out by the available biological information. The females of *Trachusa perditæ* Ckll. construct their own burrows in the ground and use pieces of leaves cemented together with plant resin to form their cells. In addition a considerable number of pebbles and dirt particles are incorporated into the pitch-like material. In *Heteranthidium larreae* the burrows, which are constructed by the females, terminate in cells constructed of resinous material and soil particles. Among the many species of *Dianthidium* whose nests have been recorded, none construct their own burrow but build nests of resin usually with pebbles and occasional twigs on rocks, grasses, bushes and trees or in cavities in twigs, snail shells, door locks, etc.

These habits may be contrasted with those of species of *Anthidium* and *Callanthidium* which appropriate the burrows of other insects and use only plant down and pebbles in nest construction.

SELECTED REFERENCES

- Cockrell, T. D. A. 1897. The New Mexico species of *Anthidium*. Can. Ent., 29:220-223.
- Custer, C. P., and C. H. Hicks. 1927. Nesting habits of some Anthidiine bees. Biol. Bull., 52:258-277, 1 fig.
- Hicks, C. H. 1926. Nesting habits and parasites of certain bees of Boulder County, Colorado. Univ. Colo. Studies, 15:217-252.
- Hicks, C. H. 1929. On the nesting habits of *Callanthidium illustre* Cresson. Can. Ent., 61:1-8.
- Michener, C. D. 1941. A synopsis of the genus *Trachusa* with notes on the nesting habits of *T. perditæ*. (Hymenoptera-Megachilidae). Pan-Pac. Ent., 17:119-125.
- Michener, C. D. 1944. Comparative external morphology, phylogeny, and a classification of the bees. (Hymenoptera). Bull. Am. Mus. Nat. Hist., 82:151-326, 246 figs.
- Schwarz, H. F. 1928. Bees of the subfamily Anthidiinae, including some new species and varieties, and some new locality records. Journ. N. Y. Ent. Soc., 36:369-419, pls. 12 and 13.